ABSTRACT OF THE DISCLOSURE

An optical filter, adjustable add-drop-continue module and circuit for bundled cross-connect functionality, wherein the transmission response of the optical filter is varied by changing its temperature, tuning of the filter can be carried out by mechanical pressure or tension, the filter can be used to produce add-drop-continue modules which are suitable both for add-drop operation and for drop-continue operation, and cross-connect modules can be constructed from the optical filters.

In the claims:

On page 17, cancel line 1, and substitute the following left-hand justified heading therefor:

We Claim as Our Invention:

Please cancel claims 1-19, without prejudice, and substitute the following claims therefor:

20. An optical filter for producing a drop-and-continue function, comprising:

a wavelength-selective grating having temperature-dependent reflection and transmission characteristics; and

a device for adjusting a temperature of the grating, wherein a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted.

21. An optical filter for producing a drop-and-continue function as claimed in claim 20, wherein filter action of the optical filter is lost upon a further temperature change.

22. An optical filter for producing a drop-and-continue function as claimed in claim 20, wherein the grating includes at least two regions in an optically transparent material, each of the at least two regions having respectively

different temperature-dependent refractive indices such that a difference between the refractive indices is at least approximately zero at one temperature within a temperature-controllable working range.

23. An optical filter for producing a drop-and-continue function as claimed in claim 22, wherein the filter is designed in planar technology.

24. An optical filter for producing a drop-and-continue function as claimed in claim 20, wherein the filter is designed as a tunable band-stop filter.

25. An optical filter for producing a drop-and-continue function as claimed in claim 24, wherein a bandwidth of the filter is tuned to a bandwidth of a transmission channel.

26. An optical filter for producing a drop-and-continue function as claimed in claim 24, wherein a bandwidth of the filter is tuned to a bandwidth of a plurality of adjacent transmission channels.

27. An optical filter for producing a drop-and-continue function as claimed in claim 24, wherein tuning is carried out by at least one of mechanical pressure, tension and bending.

28. An add-drop-continue module, comprising:

an insertion device;

a branching device for optical signals; and

an optical filter for producing a drop-and-continue function, the optical filter including a wavelength-selective grating having temperature-dependent reflection and transmission characteristics, and a device for adjusting a temperature of the grating such that a first signal component to be branched off is

reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted, wherein the optical filter is connected between the branching device and the insertion device.

29. An add-drop-continue module as claimed in claim 28, further comprising:

a plurality of optical filters connected between the branching device and the insertion device.

30. An add-drop-continue module as claimed in claim 28, wherein at least one of the branching device and the insertion device is a circulator.

31. An add-drop-continue device formed of a plurality of add-drop-continue modules connected in series, each of the add-drop-continue modules comprising:

an insertion device;

a branching device for optical signals; and

an optical filter for producing a drop-and-continue function, the optical filter including a wavelength-selective grating having temperature-dependent reflection and transmission characteristics, and a device for adjusting a temperature of the grating such that a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted, wherein the optical filter is connected between the branching device and the insertion device.

32. A drop-and-continue module, comprising:

a branching device for optical signals; and

a tunable band-stop optical filter for producing a drop-and-continue function, the filter including a wavelength-selective grating having temperature-

dependent reflection and transmission characteristics, and a device for adjusting a temperature of the grating such that a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted, wherein the optical filter is connected downstream of the branching device.

33. A cross-connect module, comprising:

a plurality of inputs;

a plurality of outputs; and

at least one optical filter for producing a drop-and-continue function, the filter including a wavelength-selective grating having temperature-dependent reflection and transmission characteristics, and a device for adjusting a temperature of the grating such that a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted.

34. A cross-connect module, comprising:

a plurality of inputs;

a plurality of outputs; and

at least one add-drop-continue module having an optical filter connected between a branching device for optical signals and an insertion device, wherein the optical filter produces a drop-and-continue function and includes a wavelength-selective grating having temperature-dependent reflection and transmission characteristics, and a device for adjusting a temperature of the grating such that a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted.

35. A cross-connect module as claimed in claim 33, wherein at least one of the branching device and the insertion device is a quad circulator.

36. A cross-connect device including a plurality of series-connected cross-connect modules, each of the cross-connect modules comprising:

a plurality of inputs;

a plurality of outputs; and

at least one optical filter for producing a drop-and-continue function, the filter including a wavelength-selective grating having temperature-dependent reflection and transmission characteristics, and a device for adjusting a temperature of the grating such that a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted.

37. A method for tuning an optical filter without interfering with transmitted signals, wherein the optical filter produces a drop-and-continue function and includes a wavelength-selective grating having temperature-dependent reflection and transmission characteristics and a device for adjusting a temperature of the grating such that a first signal component to be branched off is reflected by the grating and a second signal component having a same wavelength as the first signal component is transmitted, the method comprising the steps of:

adjusting the optical filter such that, as a result of a first temperature change, the optical filter loses its filter characteristic;

tuning the optical filter to a predetermined new wavelength; and

subsequently adjusting the optical filter, as a result of a further temperature change, such that the optical filter regains its filter characteristic at a newly adjusted wavelength.